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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/698,946	11/03/2003	Robert Hammond-Smith	MERCK-2779	5031
23599	7590	06/16/2005	EXAMINER	
MILLEN, WHITE, ZELANO & BRANIGAN, P.C. 2200 CLARENDON BLVD. SUITE 1400 ARLINGTON, VA 22201			SADULA, JENNIFER R	
			ART UNIT	PAPER NUMBER
			1756	

DATE MAILED: 06/16/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

<b>Office Action Summary</b>	<b>Application No.</b>	<b>Applicant(s)</b>	
	10/698,946	HAMMOND-SMITH ET AL	
	<b>Examiner</b>	<b>Art Unit</b>	
	Jennifer R. Sadula	1756	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

### Status

- 1) ☒ Responsive to communication(s) filed on 03 November 2003.
- 2a) ☐ This action is **FINAL**.                      2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

### Disposition of Claims

- 4) ☒ Claim(s) 1-23 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-23 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

### Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

### Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All    b) ☐ Some \*    c) ☒ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- \* See the attached detailed Office action for a list of the certified copies not received.

### Attachment(s)

- |   |   |
|---|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)   | 4) <input type="checkbox"/> Interview Summary (PTO-413)<br>Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)  | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152)             |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)<br>Paper No(s)/Mail Date <u>6/3/04; 2/8/05</u> | 6) <input type="checkbox"/> Other: _____  |

*AS*

## **DETAILED ACTION**

### ***Information Disclosure Statement***

The information disclosure statements (IDS) submitted on 6/3/04 and 2/8/05 have been considered by the examiner. However, the examiner wishes to note that these references merely submitted with English translations of an abstract have only been considered on the merits of that which was in English and no more. Any reference without an English language translation, yet cited herein was fully considered on the merits of a translation available to the examiner.

### ***Claim Rejections - 35 USC § 102***

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

Applicants claim a method of preparing a polymer film sans solvent, thinner, dispersion agent, polymeric binder or monomer compound which may be converted to a binder via polymerization. Preferably, the compound is a polymerizable phenyl benzoate derivative.

Claims 1-8, 10-19 and 22-23 are rejected under 35 U.S.C. 102(b) as being fully anticipated by Meyer et al., U.S. Patent No. 6,136,225 ("Meyer").

Meyer teaches polymerizable liquid crystalline compounds for use in optical display devices and cholesteric liquid-crystalline colorants and pigments comprising compounds of formula I wherein M anticipates Applicants Ph-COO-Ph central structure as noted preferable by Meyer in column 5, line 55. Examiner notes that the Y groups of Meyer may be single chemical bonds thereby granting one side of the mesogen as anticipating R wherein A-Z is a spacer and

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C=C or C≡C (2:31-50). Examiner further notes that the L-groups as taught by Applicants need not be present, however Meyer anticipates substituents (see column 4). Meyer further teaches that preferably A-Z is reactive and polymerizable, thereby anticipating P-Sp of Applicants formula (see also compounds of formula 15/16 wherein only one side of the mesogen is polymerizable).

With regard to the film formation without viscosity additives, Meyer teaches that while it is important to adjust the viscosity, these mixtures have a lower viscosity by nature and are suitable for applications at room temperature (thereby anticipating Applicants' claim 2). Meyer further details that the process for the production of such coatings having a liquid-crystalline ordered state does not necessarily need the use of a diluent to reduce the viscosity as the effected liquid-crystalline alignment and polymerizing may be enough (26:6-14).

With regard to claims 4-7, the materials are taught to be nematic and for use with chiral additives to form a cholesteric phase material (1:40-55). With regard to claim 8, Meyer teaches that the chiral compound here can be the liquid-crystalline compound itself or it can be added to a nematic liquid-crystalline phase as a chiral dope (1:40-55). Particularly, with regard to A-Z, Meyer teaches that chiral polymerizable compounds containing one of these groups have the advantageous property of particularly low phase-transition temperatures and broad phase ranges and are thus particularly suitable for applications at room temperature (24:22-24), which is particularly true of the carbonate group (3:20-32). Lastly, with regard to claim 12, the molar %'s are taught in column 21 of Meyer.

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Claims 1-19 and 22-23 are rejected under 35 U.S.C. 102(b) as being fully anticipated by Coates et al., U.S. Patent No. 6,207,770 ("Coates I").

Coates I teaches cholesteric flakes comprising chiral polymerizable mesogenic materials wherein one or more groups on the main-chain are polymerizable (abstract). These flakes are taught to be formed and coated on to a substrate and aligned to form polymeric optically anisotropic films (2:60-3:1). With regard to Applicants' claim 3, Coates I teaches that the compounds satisfy formula II (column 4) wherein MG anticipates Applicants Ph-COO-Ph (see formula III).

With regard to claims 4-7, Coates I teaches that the mixtures of polymerizable mesogenic monomers normally exhibit broad nematic or cholesteric mesophase ranges with relatively low melting temperatures, the film can be aligned and cured at temperatures below 100°C, preferably between 30 and 80°C (14:35-39).

With regard to claim 8, Coates I teaches that the use of certain chiral and achiral polymerizable compounds with one or more terminal polymerizable groups for the manufacturing of such flakes may be necessary depending upon the intended use (1:8-11). With regard to claim 9, Coates I teaches that to achieve uniform alignment with planar orientation, i.e. orientation of the helix axes normal to the surface of the coated mixture, the film can be sheared for example by means of a doctor's blade, or in another preferred embodiment, a second PET layer is laminated on top of the coated material. In this case, the shearing caused by putting the two substrates together is sufficient to give good alignment (14:17-27). Lastly with regard to Applicants' claim 12, Coates I teaches the molar weight percents as specified (see column 13).

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Claims 1-19 and 22-23 are rejected under 35 U.S.C. 102(b) as being fully anticipated by Coates et al., UK Patent No. 2 357 061 ("Coates II").

Coates II teaches a layer of liquid crystalline materials for use in hot stamping foils wherein the polymerized materials may be linear or crosslinked liquid crystalline side-chain polymers (abstract) and further comprising the pendant moieties which satisfy Applicants claimed composition (see page 15, particularly la, lc, le, lf).

***Claim Rejections - 35 USC § 103***

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 1-23 are rejected under 35 U.S.C. 103(a) as being unpatentable over Meyer.

Meyer teaches the methods and composition substantially as claimed however fails to teach the addition of a "planar alignment enhancer" (of claim 9) or the specific exemplification of the compounds of claims 20-21.

With regard to the compounds, Examiner notes that these compounds fall within the ranges and substituents as specified above. Therefore it would have been obvious to one of ordinary skill in the art to formulate these compounds via the teaching of Meyer with a reasonable expectation of forming successful polymeric films at room temperature from these liquid crystalline materials.

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With regard to the addition of an alignment enhancement, Meyer teaches that when the nematic materials are elongate molecules frequently form nematic liquid-crystalline phases which are characterized by an alignment long-distance ordering owing to parallel arrangement of the long axes of the molecules. If a nematic phase of this type contains chiral compounds, a so-called cholesteric phase forms, which is characterized by a helical superstructure of the long axes of the molecules. Additionally, Meyer teaches that additives may be added prior to polymerization however those additives may require their own solvents (22:13-25).

Therefore it further would have been obvious to one of ordinary skill in the art at the time of invention to add planar alignment aids to the compositions of Meyer with a reasonable expectation of forming optically useful polymeric films as specified by Meyer.

Examiner further notes that due to the teaching of Meyer and the alteration of viscosity (and noting that the viscosity is sufficient for film forming according to Meyer), one of ordinary skill in the art would have a reasonable expectation of success in forming a film at room temperature without the use of solvents even though Meyer does not specifically exemplify this.

Claims 20-21 are rejected under 35 U.S.C. 103(a) as being unpatentable over Coates I or alternatively over Coates II.

Coates I and Coates II both teach the methods and composition substantially as claimed however both fail to exemplify the specific compounds of claims 20-21.

With regard to the compounds, Examiner notes that these compounds fall within the ranges and substituents as specified above. Therefore it would have been obvious to one of ordinary skill in the art to formulate these compounds via the teaching of Coates I with a

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reasonable expectation of forming successful polymeric films at room temperature from these liquid crystalline materials.

### ***Conclusion***

The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. Sharples et al., European Patent No. 0 940 707 teaches anisotropic polymer materials wherein claim 1 anticipates Applicants' claim 12 and compounds 3 and 4 specifically read on Applicants' claimed composition, however the examples teach the use of solvents.

Dunn et al., U.S. Patent Publication No. 2003/0085377 teaches polymerizable liquid crystalline materials comprising at least one polymerizable liquid crystalline material as depicted by formula I (0051) wherein MG anticipates Applicants Ph-COO-Ph structure (see formula II). Non-mesogenic materials may be added (0175), wherein the ratios of materials are noted (0171) thereby anticipating Applicants' claim 12. However, a polymerization initiator is necessary (0165-0167).

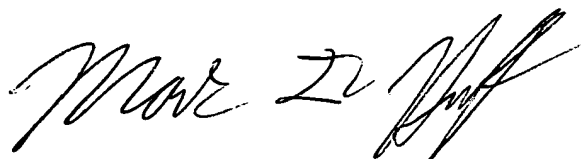
Any inquiry concerning this communication or earlier communications from the examiner should be directed to Jennifer R. Sadula whose telephone number is 571.272.1391. The examiner can normally be reached on Monday through Friday, 10am-6pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Mark F. Huff can be reached on 571.272.1385. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.



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Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

A handwritten signature in black ink, appearing to read "Mark F. Huff". The signature is fluid and cursive, with the first name "Mark" being the most prominent.

**MARK F. HUFF**  
**SUPERVISORY PATENT EXAMINER**  
**TECHNOLOGY CENTER 1700**

JRS

30 April 2005